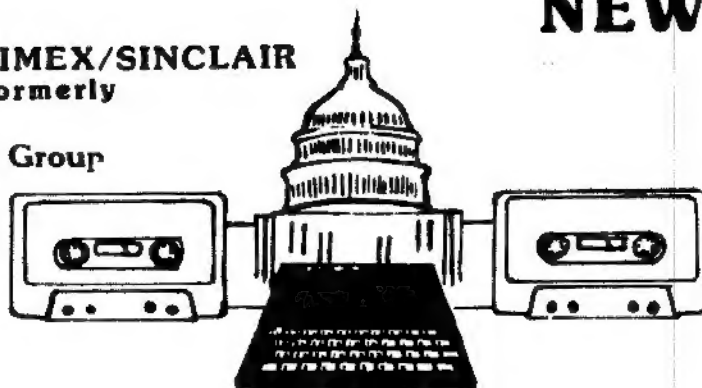


CATS

CAPITOL AREA TIMEX/SINCLAIR
USERS GROUP :Formerly
Prince George's
Timex/Sinclair User's Group

NEWSLETTER



Vol 1, No. 9
December, 1983

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*** A COMPUTING PHILIPPIC ***

WELCOME to our final issue of the year. 1983 has turned out to be a great year not only for the Computer Industry, Timex and of course Capital Area Timex/Sinclair Users' Group. We have gone from nothing in January to over 120 paid members in November. We hope to close the year with at least 125.

Timex promised us many things in 1983. They came out finally with the TS2068 in October. They also started delivering the TS2020 Tape Recorder. They have promised the Modem for sometime in December. And before I forget, the TS1500. Many people don't know yet where the 1500 fits in the scheme of things. But if you were unhappy with the 1000, the 1500 should answer your questions about a replacement for the 1000 keyboard. The coming of the 80 column full size printer early in 1984 should really have the Timex machines take off. The microdrives will really lick the storage capacity of the machines. And of course if the local network is handled correctly we should all be able to communicate using our machines over the telephone.

There were some very unhappy Computerists during 1983. They were very disappointed in the way TIMEX has handled the relationships with the peripheral manufacturers that support the Timex machines. They also were very impatient with Timex in late delivery of promised production. I don't feel that Timex has given its just due when it comes to recognizing those that support its products. The people that really count are the members of the TIMEX/SINCLAIR Users' Groups throughout the U.S. and Canada. These members are the CONSUMERS that TIMEX better cater to or else lose the entire market to machines that may not meet all the standards of the Timex but at least recognize that there are people out there in the marketplace that can make or break the Timex. Another very important person is the Vendor or dealer who sells the Timex on the retail level. He doesn't seem to get much support at all. The leaders of the User Groups give more support to Retailers than Timex

Continued on p.4

HERE'S our bonus sized, holiday issue. That "our" in the last line is significant. There has been a wonderful response to my requests for help on the newsletter. It's reflected in the list of people involved with this issue. There aren't that many more names present, but 75% of those listed helped with the nuts & bolts of production, as well as with the writing! You, the reader can help also; if there are any problems with the composition of the newsletter - crooked copy, confusing splits in the articles, etc. - let one of the folks in the box below know.

We still (always) need material. I've included a short paragraph below, discussing the format for submissions. The bottom line is, if you were interested in something, then others in the club are also interested in the same thing - and the best way to contact those folks is to write a piece in the newsletter.

If you got in on Jules' offer for new SYNC subscriptions, you may pick up your complimentary copy of the Nov/Dec SYNC at the next meeting. The regular subscription will still start with the Jan/Feb issue.

If you paid for a copy of The Essential Guide to Timex/Sinclair Home Computers, you have one more chance to pick it up. All copies that haven't been picked up by the end of the Dec. 10 Meeting will be donated to the door prize fund.

Twenty-eight copies of the survey have been returned. That's 25%: not a bad rate of return, but that also leaves 75% of CATS members that haven't taken the time. If you want your voice to be heard,

get a copy of the survey (Nov newsletter) filled out and back to me - either at the meeting on Dec. 10 or by mail before December 26. I'll print a tabulation of responses in the January newsletter.

Thanks for your continuing help and encouragement.

nt. Mark Fisher

Just received your fine newsletter, and
would like to comment:

1. "A Truly Portable Sinclair/Timex" by Les Solomon, from August 1983, Computers and Electronics. I've been struggling with this circuit for about three months. It works, no doubt. I have had less "crashes" when everything is working, but, let's examine the 6V Polaroid Battery. My computer accepts 12V without load. It's Ser. No. T 087443 and operates from a power supply (provided after purchase by Timex) and listed as 9V 1.5 A. output, but puts out 12V when measured without load. My machine will not work on 6V, but works well on 2 Polaroid batteries, but it runs them down rather fast. Another problem. By the time my Polaroid batteries are "available" they're about 1/2 out of date. To collect 2 takes

Continued on p.4

SUBMISSIONS for this newsletter are eagerly solicited. The primary function of this newsletter is to serve as a method of communication between members: thus, when selecting material for each issue, first priority will be given to member's submissions. Publication of material does not transfer rights from the author; in fact, it may establish priority.

Submissions may be reviews, articles on applications, programming techniques, hardware, or anything else you can imagine. Pertinent articles from other publications will also be considered.

I would prefer material to be typed, single spaced, in 3 1/4" columns - but don't break your back: the Xerox doesn't really care.

S.A. Baker
Ned Beeler
Paul Beverly
Mike Cohen
Audry Curnutt
Bob Curnutt
Mary Feldman
Mark Fisher
Sarah Fisher

Jules Gesang
Gyuri Grell
Mihaly Grell
Don Mayes
Walt Sillars
Lloyd Unsell
Stew Vance
Jim Wallace

	<u>Meeting</u>	<u>Newsletter Submission</u>
January 1984	14th	December 26, 1983
February 1984	11th	January 23, 1984
March 1984	10th	February 20, 1984
April 1984	14th	March 26, 1984
2 May 1984	12th	April 23, 1984

A MESSAGE FROM THE PRESIDENT

I want to thank all of you for taking the time to fill out the SURVEY forms.

Now with the advent of the TS 2068, knowing what's wanted and needed for the meetings will become increasingly difficult.

But with the SURVEYS and other written comments, I don't see any reason why the meetings can not continue to be interesting and informative.

And of course, without your support.....

THE MEETING

During the last two meetings several people had requested floor time. Most unfortunately it had to be denied them due to the timing of the agenda.

I believe the main problem is me. By not making clear, the process for gaining access to the floor, I have caused undue frustration to IMPORTANT people with IMPORTANT things to say.

For that inexcusable oversight, I APOLOGIZE to all, (the people involved and the membership).

I invite those people, through the process listed below, to re-apply for the floor time you so justifiably deserve and are entitled to.

FLOOR TIME

1. Information from the SURVEYS is correlated and reviewed to see what the membership wants
2. On a continuing basis people are making known, to the executive committee, subject matter they are willing to talk about
3. From the pools of information in items 1 & 2, an agenda starts to take shape for the next meeting
4. Once floor time is committed to someone, it is only fair to ensure they will have that time to tell their story

Now the problem is, how to invoke the provisions of ITEM # 2.

Recommended:

1. Call a committee member detailing the item you would like to talk about
2. Notify a committee member during a monthly meeting of your intentions

3. Call me personally at 441-4685

YOU SHOULD:

- a) have a written outline of your talk for review
- b) have timed your talk to fit within a 15 minute time frame
- c) be willing to be patient. Some times we have more speakers than floor time
- d) be willing to take constructive criticism
- e) be willing to meet with the executive committee to explain your talk

I hope these simple guidelines help reduce future misunderstandings and produce even more people who want to share their discoveries with the membership.

FINAL FOOTNOTE

Your continuing support is absolutely required for the success of our club.

THANK YOU...NED

Notes from the Librarian

I have started the Library program with the program list sent to me by members. As of Nov. 21 I have received only 9 lists and wish to thank the people who sent them.

They are Ellen Rogers, Stew Johnson, Michael N. Cohen, John R. Flanagan, Wayne Keyser, Rick White, Stew Vance, Mark Fisher, and Michael L. Cohen the Librarian.

Out of these nine people I have received 46 programs in the section Business Household and Education. They range from Filing to Word Processing, Financial to Math problem solving.

I also received 20 Game programs. There are many interesting programs listed, but it is up to you the membership to decide where we go from here. I have some more work to do on the list but a copy will be available at the next meeting. There I will trade you a copy for your program list.

Michael L. Cohen 270_5991

(Continued from page 1) does itself. The last person in the chain of distribution is the person or persons that have produced Software and Hardware to supplement the use of the ZX81, TS1000 and TS1500. These are the people that have been stepped on. When Timex announced the coming of the TS2068 they were asked by at least 100 peripheral manufacturers for details of the operating system so they could write software and develop interfaces for printers, floppy discs, modems, and other sundry items to support the machine. It has been a year since the TS1000 hit the U.S. marketplace but as of last July there were at least 200 manufacturers of these peripherals supporting the machine. That is not to forget the writers and authors of the splendid books and articles they have published on the TS1000 and TS1500. There are several good books in the marketplace now about the TS2068 type machine, but they are takeoffs on the U.K. Sinclair manufactured SPECTRUM. The two machines are not compatible.

I am at a loss to understand where Timex is going in this marketplace. I have yet to get a clearcut picture of whether there is an overall plan of what Timex is doing. Is it a hit or miss type of operation that lets things take care of themselves? Hoping if problems are ignored they will go away.

Over the past year I have made suggestions to Timex regarding the contact with user group. But to no satisfaction; all has been ignored. I am not alone in this frustrated situation. There are many other User Group members across the country that have the same feeling. But we carry on in our small way in spite of, not because of Timex.

To sum up: I guess the real reason we go on in spite of all the negatives is because we enjoy what we are doing with the Timex machines. It has such potential. We have found this out in using the ZX80, ZX81, TS1000, TS1500 and now the SUPER TS2068.

In addition there are some wonderful people we have met from all over the U.S. and from overseas who get the same thrill of using the equipment. There were times we visited with Mom and Pop operations in a garage or barn as well as large firms employing hundreds of people. All these folks were turning out Software and Hardware to support the Timex Computers.

Last but not least, I would be shortchanging the PRESS if I did not mention SYNC MAGAZINE, TIMEX SINCLAIR USER MAGAZINE and SYNTAX for the wonderful job they do of dedicating their publications to the ZX/TS machines. In addition the hundreds of User Group newsletters that turn out 1 page to 20 pages of wonderful material each month. Even TIMEX COMPUTER CORPORATION with its TIMEX CLUB RAMBLINGS is important to keeping the Timex public informed with timely information.

Let me close here by WISHING YOU ALL A
HAPPY HEALTHY NEW YEAR. HAPPY COMPUTERING
In 1984.

JULES GEBANG

Continued from p. 2

longer. I contemplate a gel-battery of 9V output, but haven't paid the bill yet. Any suggestions?

2. Look on Radio Shack catalog, page 121, Item "M Remote On/Off Switch, \$3.99." Great to plug into wall, then plug TV, Timex, and tape recorder into it, then turn off and on from 15 feet from wall plug. Beats in price the expensive on/off switches sold as add-ons for Timex.

3. Has anyone tried the Radio Shack "Voltage Spike Protector - 61-2790, \$9.95"? My power is both "spike-ey" and tending to fade, so I need both battery back-up and spike protector. Up to now I can't find the protector in any Radio Shack in my area. Know where they can be found? My daughter, in Denver, says she uses one and it protects needle-bending surges hitting the Electrocardiographic runs.

Keep up the good work. I'm letting it grow on me.

-- STEW VANCE --

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TRICK OF THE DAY

The flashing prompter:

INPUT NUMBER

During the last meeting we reviewed how to make the prompter flash.

Listed below is a simple program to create a flashing prompter.

```
10 PRINT AT 21,0;" INPUT NUMBER"
20 FOR J=1 TO 80
30 IF INKEY$="" THEN RETURN
40 NEXT J
50 PRINT AT 21,0;" (14 SPACES)"
60 FOR J=1 TO 80
70 IF INKEY$="" THEN RETURN
80 NEXT J
90 GOTO 10
```

This program is designed to be a SUB-ROUTINE, placed just before your INPUT statement, thus:

```
1000 GOSUB 10
1090 INPUT J$
```

Now for the next meeting, I would like to see the membership experiment with this program.

The idea is to see if we can create a more efficient version.

NOTE: This is a group participation activity; no exceptions. The argument-I have a 2068 that flashes automatically -will not be accepted.

During the tutorial segment of the meeting, we'll take about 15 minutes to develop a super prompter program for the TS 1000 and 1500.

THANKS TEAM.....NED

VI-CALC

If you use a spreadsheet program such as VisiCalc or SuperCalc, there is a users' group for calc people called "Intercalc". The Intercalc people publishes its own newsletter of hints and techniques. You can contact them at Intercalc, Box 254, Scarsdale, N.Y. 10583

Helpful Hint From Harry Hacker

Often when programming we use a "Boot-UP" routine to have the program start automatically. This is especially useful when we have stored variables in the program which would be cleared by any use of "RUN".

The routine is:

```
9990 SAVE "Program name"
9991 CLS
9992 GOTO 100
```

The line numbers are selected to fit in your program and can be located anywhere.

Of course, what happens is that we bury the SAVE command somewhere and then forget exactly where.

The solution is: introduce one more variable—LET SAVE = 9990. Then when we want to save the program we can use "GOTO SAVE" and we avoid racking our brain or rotting our eyes in search of the save routine.

If you have a helpful hint for old Harry send it in to CATS NEWSLETTER. A free windshield wiper for your computer will be your reward if Old Harry thinks you deserve it.

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↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑

"This month's presentation is a graph subroutine you can incorporate into your own program. This one is not in BASIC and will be printed onto your screen in about one second! The "Example" program will give you an idea of how it works (in BASIC).

Enter the rest of the BASIC "EXAMPLE" program and try it out. There are some small limitations you must take note of. You can enter 12 pieces of data to represent each month. The addresses that receive this are: 16582-16593, so when you make use of the program, use these addresses to POKE your data into. Another important aspect of this routine is that data must be a number between 1 and 18. This means you will have to scale your data DOWN to fit. Zero and 19 will cause the program to crash!

Z-WEST, September, 1983, 2(9), 3-4.

```
FOR N=16914 TO 16700  
INPUT A  
POKE N,A  
PRINT AT 21,4;N,TAB 10;A  
SCROLL  
NEXT N
```

```

1 REM %D EERND2,Y/770-X RETUR
N 4 SAVE GOSUB ?1? RETURN 4 GO
SUB 2? 5 EERND2/ SAVE Y?1? RETU
AN 4 INPUT "Y=?5?? RETURN 4 P
LOT />52? (LEN AND? GO
SUB ?AB3 AND?MCHR$ AND?? GOSUB
?AB3 ANDUCHR$ AND? GOSUB ?USA AN
DEAND=0? 5 GOSUB PI1? RETURN
4 NEXT GOSUB ?USA AND? GOSUB ?U
SR ANDUVAL ANDXUVAL AND RETURN
47Y$UVAL AND? LEN AND GOSUB ?AB3
AND? GOSUB ?USA ANDY MCHR$ AND
EERND1? GOSUB ???* SANDINKEY$
GOSUB ?/J F M A M J J A S O N D
TAN
2 PRINT "PRESS ANY KEY FOR A
SAMPLE OF"
3 PRINT TAB 8;"THIS GRAPH."
4 IF INKEY$="" THEN GOTO 4
5 CLS
6 GOTO 11
8 SAVE "GRAPH"
9 RUN
10 STOP
11 RAND USR 16514
12 FOR N=1 TO 250
13 NEXT N
14 CLS
15 PRINT TAB 10;"ENTER DATA"
16 FOR N=1 TO 12
17 INPUT A
18 IF A<1 OR A>18 THEN PRINT
DATA OUT OF RANGE"
19 IF A<1 OR A>18 THEN GOTO 17
21 POKE (16581+N),A
22 PRINT A;" ";
23 NEXT N
24 CLS
25 GOTO 11

```

SECTION 1

1	41	0	42	12	64
30	9	62	24	35	35
54	22	61	254	0	32
248	237	74	29	123	254
0	32	237	30	19	1
33	0	42	12	64	9

SECTION 2

126	254	116	32	3	35
24	248	62	5	119	28
123	254	0	35	238	14
25	62	3	119	13	35
181	254	0	32	248	21
18	13	12	2	0	2
17	15	3	5	2	3
11	16	195	64	64	2
0	237	75	210	64	10
50	214	64	60	60	19
237	63	210	64	60	214
64	65	237	75	210	64
42	12	61	0	61	175
1	33	0	237	65	23
153	254	0	32	243	217
75	210	64	3	3	217
57	210	61	55	207	61
61	50	197	64	201	1
32	195	62	13	60	187
61	1	195	64	237	67
210	61	1	64	5	217
67	210	64	65	0	50
214	61	42	12	64	17
150	0	237	60	64	93
1	23	0	13	64	55
237	275	64	55	47	0
43	0	50	0	65	0
50	0	47	0	67	0
60	0	50	0	62	0
61	0	41	201		



Fig. 3

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By itself, it is a moderate sized biege box, with a telltale platen and paper slots to indicate its function, and three buttons on its front panel. When it's installed in the place of the Timex 2040 printer, its true size becomes apparent - I had to clear some extra space to fit it in: along with its supply of paper, it covers an area equal to eight T/S 2040's.

Setup is straightforward; plug it in, plug in the cable from the Centronics interface, and turn it on. A reassuring clunk-clunk-clunk announces that it's awake. Turn it on again, holding down the TOF (top of form) switch, and the print test starts up - whee ! Now back to serious work. There are 16 switches that have to be set to let the Prowriter understand the Timex/Memotech. Slow work; the terminology is unfamiliar, and each switch controls a different aspect of the relations between the two machines. Fortunately, Tom Woods has published a switch pattern for the Timex, and that got me started.

In addition, I was typing on a full size keyboard (read FAST) while the Sinclair INPUT

PRINTER FEATURES

Character sets are only one part of the Prowriter's abilities. Every aspect of the machine is under electronic control, and the user can change these at will. Both horizontal and vertical tabs can be set up, text can be compressed or e x p a n d e d, underlined or boldfaced. Line feed can be adjusted big.

Mechanically, the Prowriter is either friction or pin feed, and can be adjusted for paper thickness and impression strength.

As you may have guessed, I like it. I sometimes wish it had an italics option, as some other printers do. Print quality is excellent, without sacrificing the flexibility of a dot matrix system. A daisy wheel printer would be better at printing fine, carefully sculptured letters - I wouldn't use this to do a thesis for Harvard. But the bottom line is, its fast, simple, and flexible; an excellent value.



PLANNING A TRUST

As I noted the snow on the peaks of the attendees at the last meeting I was moved (by the plea for Newsletter items) to respond with a little program I wrote some time ago when a grandchild was born. This permits planning for a sum of money more than a decade in the future, adjusted for (estimated) inflation figures. Your guess is as good as mine of average inflation over the upcoming years, but we can all guess. If you follow the progress of the Fund, you can make adjustments. Run it several times with various assumptions, you will be surprised at the outcomes. I am not a registered financial analyst, so I can only say I invest for my grandkids in an Equity Mutual Fund which has averaged 25 per cent growth for the past ten years. (Before we leave, I can also say that my children use this program in future planning for the kids' education, etc.) Oh, and the algebraic formulae come from my daughter's "Business Math" book from her college. Any smart business calculator can do the same thing, but not all in one package.

-- STEW VANCE --

ESTABLISH GIFT TRUST

[illegible]

C. THE THREE AMOUNT IS \$34927

1. The first step is to identify the problem. In this case, the problem is that the company is not meeting its sales targets.

PRINTING PLANT

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FOR SALE* 2-cassette recorders,
Lafayette RK-85 & 86, both have
problems. Good for tinkering a-
round with. Cronus electronic
digital 5-function stop watch.
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```

1000 PRINT "ESTABLISH GIFT
1010 INPUT "TRUST", A$
1020 INPUT "ON WHAT FUND DO YOU WANT TO INVEST?", B$
1030 INPUT "HOW MUCH DO YOU WANT TO INVEST TODAY?", C
1040 INPUT "HOW MANY YEARS TO MATURITY?", D
1050 INPUT "WHAT RATE OF INTEREST DO YOU WANT TO ESTIMATE?", E
1060 INPUT "WHAT DATE NEXT YEAR?", F$
1070 INPUT "WHAT PERCENT DO YOU WANT TO WITHDRAW EACH YEAR?", G
1080 INPUT "WHAT IS THE TARGET AMOUNT?", H
1090 INPUT "DO YOU WANT TO ENTER AMOUNT EACH YEAR?", I
1100 INPUT "DO YOU WANT TO ENTER TOTAL ANNUAL WITHDRAWALS?", J
1110 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", K
1120 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", L
1130 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", M
1140 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", N
1150 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", O
1160 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", P
1170 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", Q
1180 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", R
1190 INPUT "DO YOU WANT TO ENTER PERCENT OF FUND TO WITHDRAW?", S
1200 PRINT "SINKING FUND STARTING WITH DEPOSIT OF $", INT B$
1210 PRINT "AND DEPOSITING $", INT C, " PER MONTH WILL REACH $", INT H, " AT END OF ", INT D, " YEARS."
1220 STOP

```



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STARGAZE WITH YOUR TIMEX SINCLAIR
by Don Mayes

This program was derived from a 16K RAM version and compacted to fit a standard computer without the use of a RAM pack. A few notes should be made: K1, K2, and K3 are constants. K1 changes each year -- see the K1 Constants chart to figure out which one to use. LONG is your longitude in decimal hours. TZ is the difference in hours between your time zone and Greenwich. GMST is Greenwich Mean Sidereal Time and LMST is the Local Mean Sidereal Time.

To calculate the day of the year which is needed in the sidereal time program add the day of the month to the following monthly base numbers: January 0, February 31, March 59, April 90, May 120, June 151, July 181, August 212, September 243, October 273, November 304, December 334. Remember that in leap years you increase the day number by 1 for all dates after February.

This program listing is actually three separate programs that have been strung together and all REM statements were deleted to make this program as compact as possible. As it turned out, there is still plenty of room left to make additional changes or modifications left up to the user's delight. I left lines 0 through 9 blank in the beginning of this program to allow room for one to construct some sort of menu or subroutine to select or default to a particular subprogram within the main body. It should be noted that the variables in the three separate subprograms are not linked with each other, meaning you may have to remember the output of the sidereal time routine and plug the values in the next set of computer prompts. This is not much of a problem if you have good short term memory as most people do. The entry points for each of the three programs are line 10 for Local Mean Sidereal Time, line 32 for Right Ascension and Decimal Calculation, and line 59 for Altitude/Azimuth Conversion. The K1 constants are listed in the table below.

K1 Constants

1983	6.60649392
* 1984	6.59057904
1985	6.64037496
1986	6.62446008
1987	6.60854592
* 1988	6.59263200
1989	6.64242696
1990	6.62651304
1991	6.61099792
* 1992	6.59468400
1993	6.64447896
1994	6.62856504
1995	6.61265112
* 1996	6.59673600
1997	6.64653192
1998	6.63061704
1999	6.61470312
* 2000	6.59878800

The * denotes leap years and also note that the LAT, LONG, and TX variables for example may be set for a geographical location other than where you live to check on the correct variables where you will be setting up shop. A good place to check is the local college or university Astronomy Department. Also the local library has lots of Geo. tables for star buffs.

Editor's Note: In case you haven't noticed, my monthly column has been called off lately due to a few weeks vacation and also I was in the process of moving to a new residence. Now that things are somewhat back to normal I will have more time to devote to Hardware/Software projects. Upcoming projects include how to construct a simple light pen minimizing hardware and making strategic use of software to do the job. A light pen is a device that allows you to select menu choices right from the monitor screen without touching the keyboard.

I hope that all of you will find this challenging and helpful in your quest for bigger and better adventures in the computing power of your Timex/Sinclair. If any bugs or errors pop up, please feel free to address them to me or slip a correction notice in the monthly newsletter. This program is copyrighted, and is intended for free distribution via

tapes or listings to all who wish to use it. Modifications or corrections during distribution are solicited.

Happy Gazing

Donald Mayes, Jr.
New Twisted Pair
589-4190

1
2
3
4
5 Your menu here
6
7
8
9
10 LET K1 = 6.60649392
11 LET K2 = .0657098232
12 LET K3 = 1.0027379093
13 LET LONG = 5.1234
14 LET TZ = 5
15 PRINT " DAY OF THE YEAR " ;
16 INPUT D
17 PRINT " LOCAL TIME (HOURS) " ;
18 INPUT H
19 PRINT " LOCAL TIME (MINUTES) " ;
20 INPUT M
21 PRINT " LOCAL TIME (SECONDS) " ;
22 INPUT S
23 PRINT
24 LET SDT = H*(M/60)+(S/3600)
25 LET UT = SDT+TZ
26 LET GMST = K1+(K2*D)+(K3*UT)
27 IF GMST > 24 THEN GMST=GMST-24:GOTO 27
28 LET LMST = GMST-LONG
29 PRINT " LOCAL MEAN TIME " ; SDT
30 PRINT " GMST " ; GMST
31 PRINT " LMST " ; LMST
32 LET LAT = 40.1234
33 LET RAD = 57.295775135
34 PRINT
35 PRINT " ALTITUDE " ;
36 INPUT ALT
37 PRINT " AZIMUTH " ;
38 INPUT AZ
39 PRINT " LOCAL SIDEREAL TIME (DECIMAL HOURS) " ;
40 INPUT LMST
41 LET A = ALT/RAD
42 LET AZR = AZ/RAD
43 LET L = LAT/RAD
44 LET D = (SIN(A)*SIN(L))+(COS(A)*COS(L)*COS(AZR))
45 LET DC = ATN(D/SQR(1-D*D))
46 LET H = (SIN(A)-(SIN(L)*D))/(COS(L)*COS(DC))
47 LET HC = -ATN(H/SQR(1-H*H+1))+1.5708
48 LET DEC = DC+RAD
49 LET HA = HC+RAD
50 IF FLAG = 1 GOTO 330
51 IF SIN(HC)>0 THEN HA=360-HA
52 LET RA = LMST-HA
53 IF RA<0 THEN RA = RA+24:GOTO 55
54 PRINT
55 PRINT " RA=" ;RA
56 PRINT " DEC=" ;DEC
57 LET LAT = 40.1234
58 LET RAD = 57.295775135
59 PRINT " RA (HOURS) " ;
60 INPUT RH
61 PRINT " RM (MINUTES) " ;
62 INPUT RM
63 PRINT " RA (SECONDS) " ;
64 INPUT RS
65 LET RA=RH + (RM/60)+(RS/3600)
66 PRINT
67 PRINT " DEC (DEGREES) " ;
68 INPUT DD
69 PRINT " DEC (MINUTES) " ;
70 INPUT DM
71 PRINT " DEC(SECONDS) " ;
72 INPUT DS
73 LET DEC=DD+(DM/60)+(DS/3600)
74 PRINT

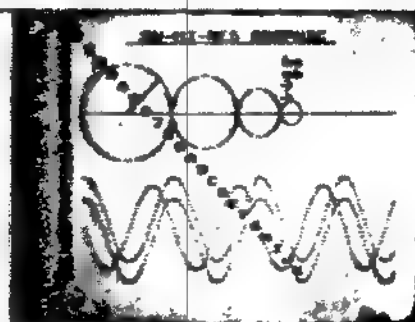
77 PRINT " LMST (DECIMAL HOURS) " ;
78 INPUT LMST
79 PRINT
80 LET HA = LMST-RA
81 LET HAD = HA*15
82 LET L = LAT/RAD
83 LET M = HAD/RAD
84 LET D = DEC/RAD
85 LET A = (SIN(D)*SIN(L))+(COS(D)*COS(L)*COS(H))
86 LET AA = ATN(A/SQR(1-A*A+1))
87 LET ALT = AA/RAD
88 LET AZ = (SIN(D)-(SIN(L)*SIN(A)))/(COS(L)*COS(A))
89 LET AZA = -ATN(AZ/SQR(1-AZ*AZ+1))+1.5708
90 LET AZM = AZA/RAD
91 IF SIN(H)>0 THEN AZM = 360-AZM
92 PRINT " ALTITUDE " ; ALT
93 PRINT " AZIMUTH " ; AZM

On Mihaly Grell's high resolution plotting program (Newsletter, Vol. 1, No. 6) I added the following statements so you get a screen print out. The question I have, is there anyway you can plot high resolution graphics on screen with the ZX81 and the 16K memory module?

181 Let X1 = X/15
182 Let X1 = Y/10
185 Print at Y1, X1; ". "

Funny you should ask. Mr Grell is also interested in the same question - but no results so far. Others have made more progress though - see below.

PS. I lost the name of the author of the above letter. You can help by putting your name on each sheet submitted (please?).



Software Only new! High Resolution Graphics

ZX81/TS1000 8K rom; 16K ram

THE SV-NI-RES PACKAGE GIVES YOU CONTROL OVER YOUR SCREEN AS NEVER BEFORE !!!!!

- Now you can have NI-RES graphics on your TV WITHOUT ANY HARDWARE CHANGES.
- Create your own character/symbol set (Lower Case, bombs, invaders, etc...)
- Access to all 174 x 256 pixels.
- Easy to use; access is similar to BASIC PLOT and PRINT
- Includes 10 user friendly utilities: PLOT, UNPLOT, PRINT, PRINC, DRAW, CLS, SCROLL-UP, -DOWN, -LEFT, -RIGHT.
- In addition to the SV-NI-RES package you will get the BASIC program used to generate the above TV picture.

TO ORDER SEND CHECK OR MONEY ORDER TO.

\$75

W. Zimalek (SV-NI-RES)
5300 Highbridge Street 53D
Fayetteville, N.Y. 13066

HANG MAN & BOGGLER

Most "computer games" derive their attraction from the speed and animation that can be programmed in. Who can forget their first glimpse of *Astroids* - with random rocks sliding gently across the screen! Unfortunately, that feeling of awe is soon reduced to familiarity. There are some games that do not depend on whizzing spaceships for their interest and we have two of them here. Putting these on a computer is not just an idle exercise, one of the uses for a computer is as an impartial arbiter. In these games the computer keeps track of the hidden information, and tells each person how they're doing.

HANGMAN
2K RAM

The instructions for this one aren't included in the listing - in 2K, there just isn't room. I'm rather proud of the method of printing the man on the screen piece by piece - note that just one return handles all the possibilities.

RULES

One player enters his word into the machine. The machine takes it, and puts up a string of *'s the length of the word. The other players then return, and guess letters. The computer keeps track of wrong guesses, and lists them under the word. If a letter is contained in the word, it is put in its correct position. The round is over either when the man falls, or the word is guessed.

BOGGLER
16K RAM

Lloyd Unsell just wrote this computerized version of Parker Brothers' Boggle. In many ways, it is a better game for all players than the original. I added a READ subroutine, and used it four times in the program to reduce the repetitive typing of LET statements. Perhaps you can use the READ subroutine in your own programs.

RULES

Since this is a 16K program, there is plenty of room for instructions to be included in the listing itself. The game requires two to six players, each with pencil and paper. The game proceeds in rounds, with points gained in each round, until one person reaches some pre-determined limit (say, 50 pts.). Words are built up from adjoining dice, with no die being used more than once in each word. The following words can be found in the sample screen (I took more than three minutes to get this list, and there are probably more).

LAM, MASK, MASS, MAKE, MAKER, LAKE
RAKE, RAKER, SAKE, LAME, RIM, REAL,
REAR, REAM, GEE, ROAM, ROAMER, MIRE,
RIME, VEAL SAME, RAM, MIKE.

The following words are NOT legal
ALSO (not in sequence), GAS, SAVE, SAM
(proper name), HERE (same die used twice).

There you are two word games that can provide you and those around you with some real fun

Mark Fisher

WHAT LETTERS ARE IN IT?

PARA*I*ORO*EN*ENE

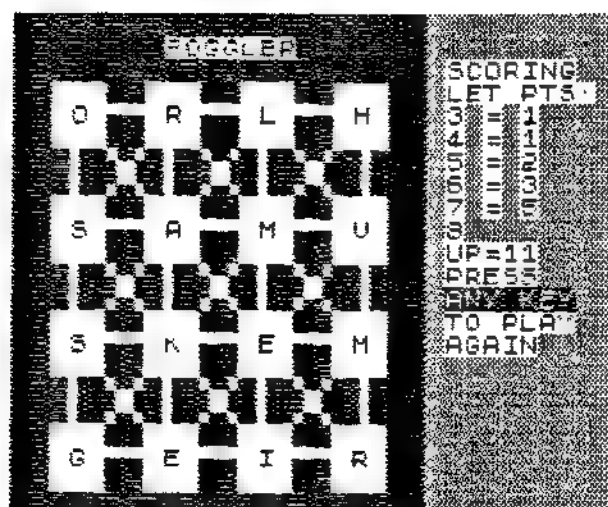
U Y S T M O S U W X N



```

5 CLS
10 PRINT TAB 8 "HANGMAN"
TAB 8 "O R O R O" TAB 8 "E N E N E"
N=1
20 DIM B$(1)
30 LET X$="N"
40 LET Y=10
50 PRINT TAB 7 "ENTER YOUR WORD"
D
60 LET F=9
90 INPUT A$
100 PRINT AT 3,4,"WHAT LETTERS"
ARE IN IT?
110 FOR N=1 TO LEN A$
120 PRINT " "
130 NEXT N
140 DIM C$:LEN A$
200 INPUT B$
210 FOR N=1 TO LEN A$
220 IF A$(N)=B$ THEN GOSUB 300
230 NEXT N
240 IF C$=A$ THEN GOTO 700
250 IF X$="N" THEN GOSUB 400
260 LET X$="N"
270 GOTO 200
300 PRINT AT 5,N-1 B$
310 LET C$(N)=B$
320 IF A$(N)=B$ THEN LET X$=" "
330 RETURN
400 PRINT AT 7,(10-Y)*2,B$
410 GOSUB 500+Y*10
420 LET X$="N"
430 LET Y=Y-1
440 IF Y<-2 THEN RETURN
450 PRINT AT 10,0 "THE WORD WAS"
A$
460 FOR F=9 TO 10
470 GOSUB 500
480 PRINT AT F,10
490 NEXT F
475 PRINT AT 10,11, "X"
480 GOTO 710
500 PRINT AT F+1,12 " "
510 PRINT AT F+1,10 " "
520 PRINT AT F+2,11 " "
530 PRINT AT F+2,10 " "
540 PRINT AT F+1,11 " "
550 PRINT AT F,11, "O"
560 IF Y=-1 THEN RETURN
570 PRINT AT 8,11 " "
570 PRINT AT 8,13, " "
580 PRINT AT 10,13 " " TAB 13
TAB 13 " " TAB 13 " "
590 PRINT AT 14,12 " "
600 PRINT AT 15,10, " "
610 RETURN
650 SAVE "HANG"
660 RUN
700 PRINT AT 10,2 "DO YOU WISH TO TRY"
AGAIN?
720 INPUT C$
730 IF C$ 1,= " " THEN RUN

```

```

10 REM *****
   REM *BOGGLER*
   REM *****
   (C) 1983 BY L. UNSSELL
   301-420-9082
20 LET READ=60
30 POKE 16416,1
40 FAST
50 GOTO 180
60 REM *** READ SUBROUTINE ***
70 FOR A=1 TO LEN Q$
80 IF Q$(A)=' ' THEN GOTO 100
90 NEXT A
100 LET A$=Q$(A) TO A-1)
110 LET Q$=Q$(A+1 TO )
120 RETURN
130 REM *** DRAW BOARD SUB. ***
140 FOR A=1 TO 23
150 PRINT B$(A),C$
160 NEXT A
170 RETURN
180 REM *** SET UP ARRAYS ***
190 DIM A$(16,7)
200 DIM B$(23,22)
210 GOSUB 9000
220 FOR B=1 TO 16
230 GOSUB READ
240 LET A$(B)=R$
250 NEXT B
260 GOSUB 9020
270 FOR B=1 TO 8
280 GOSUB READ
290 LET B$(B)=R$
300 NEXT B
310 GOSUB 9040
320 FOR B=3 TO 23
330 GOSUB READ
340 IF A$="X" THEN LET B$(B)=B
$ (VAL R$)
350 NEXT B
360 LET C$=" "
370 REM *** ROLL DICE ***
380 RAND
390 FOR A=5 TO 20 STEP 5
400 FOR B=4 TO 19 STEP 5
410 LET C=INT (RND*16+1)
420 IF A$(C,1)="1" THEN GOTO 41
0
430 LET A$(C,1)="1"
440 LET D=INT (RND*6+2)
450 LET B$(A,B)=A$(C,D)
460 IF B$(A,B)="0" THEN LET B$(
A,B+1)="U"
470 NEXT B

```

```

480 NEXT A
490 SLOW
500 GOSUB 130
510 REM *** START TIMER ***
520 PRINT AT 10,25,"3.00"
530 FOR A=2 TO 0 STEP -1
540 PRINT AT 10,25,A," 59"
550 FOR B=50 TO 0 STEP -1
560 IF B<10 THEN PRINT AT 10 27
   "0",B
570 IF B<10 THEN GOTO 590
580 PRINT AT 10,27,B
590 FOR I=1 TO 3
600 NEXT I
610 NEXT B
620 NEXT A
630 PRINT AT 4,23,"TIME UP" TAB
23,"PRESS" TAB 23,"ANY KEY" TAB
23,"TO CHECK"
640 REM *** BLANK SCREEN ***
650 FOR A=0 TO 21
660 PRINT AT A,0,B$(1)
670 NEXT A
680 IF INKEY$="" THEN GOTO 680
690 REM *** RESTORE SCORE ***
700 PRINT AT 0,0;
710 GOSUB 130
720 REM *** ADD SCORING ***
730 GOSUB 9080
740 PRINT AT 2,23;
750 FOR B=1 TO 13
760 GOSUB READ
770 PRINT TAB 23;R$
780 NEXT B
790 IF INKEY$="" THEN GOTO 790
800 CLS
810 RUN
820 SAVE "BOGGLS"
830 PRINT "WELCOME TO
BOGGLER...HIDDEN WORD GAME FOR
2-6 PLAYERS"...UNSELL NEED PA
PER AND PENCIL FOR EACH PLAYER.
"...GUESS TO LIST AS MANY WOR
DS AS YOU CAN FIND AMONG THE RAND
OM ASSORTMENT OF LETTERS DISPL
AYED -WITHIN THREE MINUTES"
840 PRINT "...WORDS MUST BE FOR
MED USING SCORING LETTERS
IN ANY DIR- ECTION, VERTICAL,
HORIZONTAL, OR ANY DIAGONAL, N
O LETTER IN THE SAME SQUARE MA
Y BE USED MORE THAN ONCE, ONE AND
TWO LETTER WORDS DO NOT COUNT
"
850 PRINT "...PRESS ANY KEY FOR
SCORING"
860 IF INKEY$="" THEN GOTO 860
870 CLS
880 PRINT "...SCORING WHEN TI
ME IS UP, PLAYER WITH MOST WORDS
READS THEM OUT. ANY WORD THAT IS
FOUND BY MORE THAN ONE PERSON
IS CROSSED OFF ALL LISTS. EACH
PLAYER IN TURN READS OUT THEIR
REMAINING WORDS, AND THE SAME PRO
CESS IS REPEATED"
890 PRINT "...REMAINING WORDS AR
E ASSIGNED A POINT VALUE BASED
ON THEIR LENGTH - A TABLE I
LL BE DIS- PLAYED...A 900
T AND IT'S PLURAL COUNT AS TWO W
ORDS. NO PROPER NOUNS, OR FOREI
GN WORDS."
900 PRINT "...PRESS ANY KEY TO S
TART."
910 IF INKEY$="" THEN GOTO 910
920 CLS
930 RUN

```

Continued on page 16.

LISSAJOUS REDUX

The following interesting Programs were sent by S. A. Baker of Arlington, Va.

He also wrote:

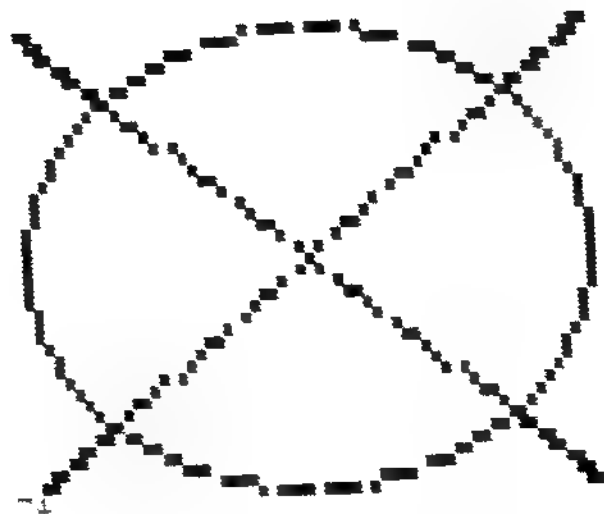
Dear Editors:

Recently many members of cats bought the paper back "The Essential Guide to Timex/Sinclair Home Computers." This book has on Page 247 a Program TRANSIM that is said to give a moving display. However, the display is stationary. To make it move, add line 265: 265 SLOW, then it works well.

The TRANSIM Program is helped by two corrections. In line 400 change AT 7,13 to AT 7,12. Also, delete line 20 and replace with line 171: 171 PRINT "PRESS S TO STOP BASE CURRENT, R TO RESTART"

Enclosed are a couple of Programs that may be of some interest to beginners who want some graphic displays for experiment. The "PATTERNS" is a variant of the LISAJOUS Put out by Jim Wallace a while ago.

Many thanks to Mr. Baker. Helpful contributions such as this make our newsletter more worthwhile.

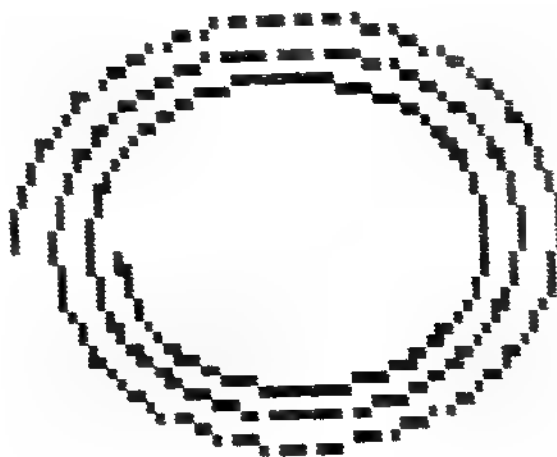


PATTERNS TRY 38 LET B=.021

```

100  PRINT "PATTERNS"
110  LET B=.021
120  LET C=1
130  LET D=1
140  LET E=1
150  LET F=1
160  LET G=1
170  LET H=1
180  LET I=1
190  LET J=1
200  LET K=1
210  LET L=1
220  LET M=1
230  LET N=1
240  LET O=1
250  LET P=1
260  LET Q=1
270  LET R=1
280  LET S=1
290  LET T=1
300  LET U=1
310  LET V=1
320  LET W=1
330  LET X=1
340  LET Y=1
350  LET Z=1
360  LET A=1
370  LET B=1
380  LET C=1
390  LET D=1
400  LET E=1
410  LET F=1
420  LET G=1
430  LET H=1
440  LET I=1
450  LET J=1
460  LET K=1
470  LET L=1
480  LET M=1
490  LET N=1
500  LET O=1
510  LET P=1
520  LET Q=1
530  LET R=1
540  LET S=1
550  LET T=1
560  LET U=1
570  LET V=1
580  LET W=1
590  LET X=1
600  LET Y=1
610  LET Z=1
620  LET A=1
630  LET B=1
640  LET C=1
650  LET D=1
660  LET E=1
670  LET F=1
680  LET G=1
690  LET H=1
700  LET I=1
710  LET J=1
720  LET K=1
730  LET L=1
740  LET M=1
750  LET N=1
760  LET O=1
770  LET P=1
780  LET Q=1
790  LET R=1
800  LET S=1
810  LET T=1
820  LET U=1
830  LET V=1
840  LET W=1
850  LET X=1
860  LET Y=1
870  LET Z=1
880  LET A=1
890  LET B=1
900  LET C=1
910  LET D=1
920  LET E=1
930  LET F=1
940  LET G=1
950  LET H=1
960  LET I=1
970  LET J=1
980  LET K=1
990  LET L=1
1000 LET M=1

```



```

100  PRINT "PATTERNS"
110  LET B=.021
120  LET C=1
130  LET D=1
140  LET E=1
150  LET F=1
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170  LET H=1
180  LET I=1
190  LET J=1
200  LET K=1
210  LET L=1
220  LET M=1
230  LET N=1
240  LET O=1
250  LET P=1
260  LET Q=1
270  LET R=1
280  LET S=1
290  LET T=1
300  LET U=1
310  LET V=1
320  LET W=1
330  LET X=1
340  LET Y=1
350  LET Z=1
360  LET A=1
370  LET B=1
380  LET C=1
390  LET D=1
400  LET E=1
410  LET F=1
420  LET G=1
430  LET H=1
440  LET I=1
450  LET J=1
460  LET K=1
470  LET L=1
480  LET M=1
490  LET N=1
500  LET O=1
510  LET P=1
520  LET Q=1
530  LET R=1
540  LET S=1
550  LET T=1
560  LET U=1
570  LET V=1
580  LET W=1
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600  LET Y=1
610  LET Z=1
620  LET A=1
630  LET B=1
640  LET C=1
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670  LET F=1
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690  LET H=1
700  LET I=1
710  LET J=1
720  LET K=1
730  LET L=1
740  LET M=1
750  LET N=1
760  LET O=1
770  LET P=1
780  LET Q=1
790  LET R=1
800  LET S=1
810  LET T=1
820  LET U=1
830  LET V=1
840  LET W=1
850  LET X=1
860  LET Y=1
870  LET Z=1
880  LET A=1
890  LET B=1
900  LET C=1
910  LET D=1
920  LET E=1
930  LET F=1
940  LET G=1
950  LET H=1
960  LET I=1
970  LET J=1
980  LET K=1
990  LET L=1
1000 LET M=1

```

```

100  PRINT "PATTERNS"
110  LET B=.021
120  LET C=1
130  LET D=1
140  LET E=1
150  LET F=1
160  LET G=1
170  LET H=1
180  LET I=1
190  LET J=1
200  LET K=1
210  LET L=1
220  LET M=1
230  LET N=1
240  LET O=1
250  LET P=1
260  LET Q=1
270  LET R=1
280  LET S=1
290  LET T=1
300  LET U=1
310  LET V=1
320  LET W=1
330  LET X=1
340  LET Y=1
350  LET Z=1
360  LET A=1
370  LET B=1
380  LET C=1
390  LET D=1
400  LET E=1
410  LET F=1
420  LET G=1
430  LET H=1
440  LET I=1
450  LET J=1
460  LET K=1
470  LET L=1
480  LET M=1
490  LET N=1
500  LET O=1
510  LET P=1
520  LET Q=1
530  LET R=1
540  LET S=1
550  LET T=1
560  LET U=1
570  LET V=1
580  LET W=1
590  LET X=1
600  LET Y=1
610  LET Z=1
620  LET A=1
630  LET B=1
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700  LET I=1
710  LET J=1
720  LET K=1
730  LET L=1
740  LET M=1
750  LET N=1
760  LET O=1
770  LET P=1
780  LET Q=1
790  LET R=1
800  LET S=1
810  LET T=1
820  LET U=1
830  LET V=1
840  LET W=1
850  LET X=1
860  LET Y=1
870  LET Z=1
880  LET A=1
890  LET B=1
900  LET C=1
910  LET D=1
920  LET E=1
930  LET F=1
940  LET G=1
950  LET H=1
960  LET I=1
970  LET J=1
980  LET K=1
990  LET L=1
1000 LET M=1

```

AUTOPSY of a PROGRAM

Last month, I showed you several elements of a program's structure. This month, I'll present a subroutine (to be added to the end of an existing program) that takes advantage of that structure to help investigate the program in question.

The Greek root of autopsy refers to self-looking. A medical autopsy today investigates the state of the systems of a patient, following his death. It provides information that is not available any other way. This will only be a partial autopsy - only one aspect of the program will be examined. In our case, the patient is capable of getting up off the table after we're done with him, and working as hard as ever.

Last month I discussed the extra bytes that the Timex inserts after every decimal number in the program file. In a long program, hundreds of bytes can be taken up with these constants. A great deal of memory can be saved if commonly used numbers are replaced by constants - but which numbers occur often enough to be so replaced? It's easy enough to scan the list for commonly used numbers, but in a long program, many possibilities may be missed. The accompanying program will scan your program, and prepare a table of number use, showing numbers used and their frequency.

THE PROGRAM

```

9750 DIM D(204)
9760 FOR N=16509 TO 35000
9770 IF PEEK N(>)126 THEN NEXT N
9780 LET N=N+5
9790 FOR L=N-6 TO N-30 STEP -1
9800 IF PEEK L(>)42 AND (PEEK L<28 OR PEEK
K L>37) THEN GOTO 9820
9810 NEXT L
9820 LET A$=""
9830 FOR L=L+1 TO N-6
9840 LET A$=A$+CHR$ PEEK L
9850 NEXT L
9860 IF A$="10101010" THEN GOTO 9960

9870 FOR L=2 TO 200 STEP 2
9880 IF VAL A$(D(L)) THEN NEXT L
9890 IF VAL A$(D(L)) OR D(L-1)=0 THEN GOT
0 9930
9900 FOR M=198 TO L-1 STEP -1
9910 LET D(M+2)=D(M)
9920 NEXT M
9930 LET D(L-1)=D(L-1)*(D(L)<>D(L+2))+1

9940 LET D(L)=VAL A$
9950 NEXT N

```

The program separates into four segments.
9750-9770 The file array (D()) is set up, then the main search loop - exited when a 126 number marker is found.

9780-9810: The main counter, N, is set ahead of the binary part of the number, and the utility loop, L, is invoked and looped until it encounters a byte that is not a digit (E counts as a digit - do you know why?).

9820-9860 An image of the number is built up in A\$, and is checked against the flag digit. The analysis will stop when it encounters this number, so you can insert it just ahead of this subroutine to avoid including the numbers in this subroutine in the overall count.

9870-9950 This is the filing routine; A\$ is compared with the numbers already in D(), and the data in D() is moved up to make room if needed.

9960-9990 The display routine.

It is not necessary to create a variable for each number found - in this case, variables for 1 & 200 would save perhaps 85 bytes. Numbers can be economically expressed using combinations (I+J=2, if I=1 for example)

This process of leafing through the program file can be used in many instances. If there is interest, I will discuss my line renumbering subroutine next month.

Mark Fisher

```

9960 FOR L=2 TO 204 STEP 2
9970 PRINT D(L-1);"--";D(L)
9980 NEXT L
9990 LET L=10101010

1--35000
1--16509
1--9960
1--9930
1--9820
2--204
1--200
1--198
1--126
1--42
1--37
1--30
1--28
2--4
1--5
6--2
9--1
1--0
0--0

```

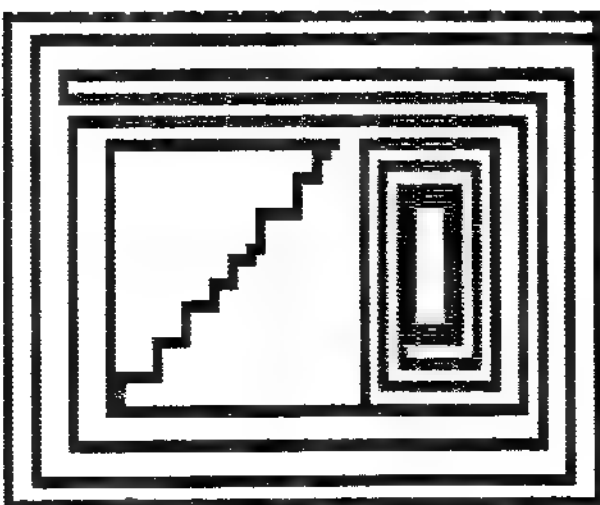
Screen Dump: use CONT to see rest of D() if your program uses more than 22 constants.

WELCOME TO MICKEYS MICRO-SKETCH

BY S K JOHNSON

```

10000 REM S S S S S TO DRAW PICS
10001 REM S TO ERASE A DOT
10002 REM S TO CLEAN SCREEN
10003 REM S TO QUIT
    
```



```

10 PRINT AT 2,0;"WELCOME TO MI
CKEYS MICRO-SKETCH"
20 PRINT "BY S K JOHNSON 2
/11/83"
30 PRINT AT 8,0;"USE KEYS S,S,
S TO DRAW PICS", "PRESS S TO ER
ASE A DOT", "PRESS C TO CLEAN SC
REEN", "PRESS A TO QUIT"
40 LET A=0
50 LET B=0
60 IF INKEY$="S" THEN GOTO 100
70 IF INKEY$="S" THEN GOTO 200
80 IF INKEY$="S" THEN GOTO 300
90 IF INKEY$="S" THEN GOTO 400
100 IF INKEY$="S" THEN GOTO 400
110 IF INKEY$="S" THEN GOTO 400
120 IF INKEY$="S" THEN GOTO 400
130 IF INKEY$="S" THEN GOTO 400
140 IF INKEY$="S" THEN GOTO 400
150 GOTO 10
160 LET A=A-1
170 IF A<0 THEN LET A=0
180 GOTO 500
190 LET B=B+1
200 IF B>=42 THEN LET B=42
210 GOTO 500
220 LET B=B-1
230 IF B<0 THEN LET B=0
240 GOTO 500
250 LET A=A+1
260 IF A>=63 THEN LET A=63
270 GOTO 500
280 UNPLOT A,B
290 GOTO 10
300 PLOT A,B
310 GOTO 10
320 STOP
    
```

Continued from page 13.

```

8990 REM *** DATA STATEMENTS ***
9000 LET Q$="0KEGYUL,0LETSUP,0CA
MDEP,0ROSHAM,0RSLCEA,0IYATBL,0TA
00AI,0FYHEET,00SEUDN,0UTOKND,05I
EHPN,0UNTGIE,0DANEZU,0XOBIFR,0GR
RULU,0JOMABO,"
9010 RETURN
9020 LET Q$="
9030 RETURN
9040 LET Q$="1,X,X,4,X,X,4,5,4,7
,3,4,5,4,7,3,4,5,4,1,1"
9050 RETURN
9060 LET Q$="SCORING LET PTS=.3
=.1,4=.1,5=.2,6=.3,7=.5,8,UP
=11,PRESS ANY KEY,TO PLAY,AGAIN,
9070 RETURN
9080 LET X=16509
9090 LET N=10
9100 IF PEEK X+256+PEEK (X+1)>=9
9110 THEN STOP
9120 REM POKE X,INT (N/256)
9130 REM POKE X+1,N-256*INT (N/2
56)
9140 LET N=N+10
9150 LET X=X+4+PEEK (X+2)+PEEK
X+31+256
9160 GOTO 9020
    
```

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,.!'@-!+!+ | []\^_`~&#

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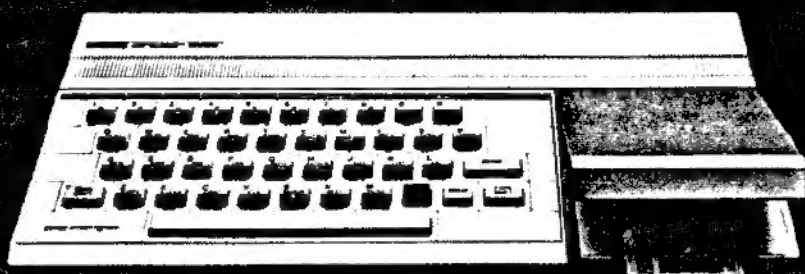
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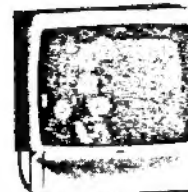
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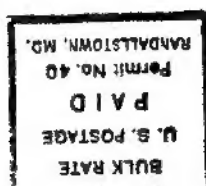
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